

Full Length Research Paper

A study of customer satisfaction, customer loyalty and quality attributes in Taiwan's medical service industry

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Accepted 15 June, 2019

Measurement of customer satisfaction in behavioral health services has received increasing emphasis due to clinicians' and researchers' desire to measure outcomes that reflect the patient's unique perspective. This study examined how overall customer satisfaction and customer loyalty associate with the medical service quality attributes offered in Taiwan using Kano's integrated model and the Customer Satisfaction Index Model. The results show that customer satisfaction was influenced by the one-dimensional and attractive attributes, and negatively affected by customer complaints. Surprisingly, the must-be attributes could not predict customer satisfaction, which suggests that competitive convergence played a role within the Taiwan context. As well, customer loyalty proved to be independent of customer satisfaction and customer complaints, which may have been due to the barriers erected to dissuade patients from changing to a new provider. The major finding suggests that hospital managers should identify and emphasize the relevant one-dimensional and attractive attributes so as to increase patient satisfaction levels. Other findings reveal new insights for researchers concerned with the quality of medical services offered in Taiwan, as well as for hospital managers who must distribute their limited resources in order to achieve the highest possible patient satisfaction.

Key words: Kano's model, customer satisfaction index model, medical service quality.

INTRODUCTION

Who is more important than the customer in terms of judging the quality of a product or service? No one (Tan and Shen, 2000). Parasuraman and Berry (1988) pointed out that with the fast changing, fierce market conditions prevalent within the service trade, improvements in terms of competitiveness and yield rates rely on effective, active, and improved service quality. Thus, service quality directly affects customer satisfaction. The same holds true for the medical service industry. Medical administrative departments in hospitals must focus on customer demands for consistency and meeting needs, for clear

for clear policies regarding service quality, and for up-to-date medical treatment and service quality (Tang and Cheng, 2001; Harris and Ralph, 1999). Further, all of the above can help to improve and increase the loyalty of both customers and hospital staff members. As consumerism within the Taiwan health care market gains momentum, health professionals must improve on the quality of service offered in order to compete. Since the implementation of the National Health Insurance (NHI) program in 1995, the health care market in Taiwan has become highly competitive. The number of wards increased to 152,901 in 2008 from 103,733 in 1994, which was an increase of 47.40%, while the number of hospitals reduced to 515 from 828 (Department of Health, Taiwan, 2009). Further, as all contracted providers are tied to an identical payment scheme for the various kinds

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of services they provide, set by the Bureau of National Health Insurance under the Department of Health, Executive Yuan, medical service providers must compete for patients under a predominantly fee-for service reimbursement system, with predominantly fixed payment schemes.

In Taiwan, prior to Cheng et al. (2003), the only information available to prospective patients or their family members when considering between multiple hospitals was the hospital reputation and the number of beds available to patients. Increased competition forced medical service providers to become more sensitive to the need for excellent customer service. Customers-patients were the consumers of medical services, and they emphasized outcome indicators when considering the quality of health care available. Therefore, medical service leaders became accountable for assisting their staff to meet patient satisfaction improvement goals and to decrease the barriers to quality patient care (Tang and Cheng, 2001). The Swedish Customer Satisfaction Barometer (SCSB) model established in 1989 was the first Customer Satisfaction Index Model pertaining to purchased and consumed products and services (Fornell, 1992). The National Customer Satisfaction Index Model had been widely used to evaluate customer satisfaction as it pertains to nations, sectors, industries, or organizations in many countries such as America, Europe, and Asia. The model constructs the antecedents and consequences of customer satisfaction using a set of structural equations. Most uses of the National Customer

Satisfaction Index Model considered customer perceptions and customer expectations as the antecedents of customer satisfaction, and adapted the Hirschman's exit-voice theory to assist in explaining the consequences of customer satisfaction. These models did not take into consideration the fact that quality elements belonging to different quality attributes lead to different effects (Hirschman, 1970). Thus, the antecedents of these models can be replaced by different quality attributes, which may assist managers to acquire more appropriate information that in turn can improve their overall quality levels and customer satisfaction.

Kano (1979) developed the Motivation-Hygiene property of quality by adapting from Herzberg et al.'s theory (1959). Further, Kano et al. (1984) proposed a two-dimensional model of quality based on customer perceptions and experience. The two-dimensional model proposed by Dr. Kano illustrates that customer satisfaction is not linearly affected by quality performance, but instead is determined by five categories of quality attributes and how they relate to consumers. Kano's model has proven useful in analyzing the characteristics of customer satisfaction and factored into the present study. This study focused on patient and customer satisfaction and proposed a new model to measure the relationship between three quality attributes, customer

satisfaction, customer complaints, and customer loyalty. Customer satisfaction was made up of three antecedents of satisfaction derived from Kano's model: one-dimensional attributes, must-be attributes, and attractive attributes. The consequences of satisfaction in this model were derived from the Customer Satisfaction Index Model, and pertained to customer complaint behaviors and customer loyalty.

LITERATURE REVIEW AND HYPOTHESES

Many empirical studies have shown that customer satisfaction secures future revenues (Bolton, 1998; Fornell, 1992), reduces future transactions costs (Reichheld and Sasser, 1990), decreases price elasticity (Anderson, 1996), and minimizes the likelihood of customers defecting if quality falters (Anderson and Sullivan, 1993). Customer satisfaction is regarded as customers can get more benefits than their cost (Liu and Yen, 2010). Customer satisfaction plays the most important role in total quality management. In comparison with other traditional performance measures, customer satisfaction is probably less sensitive to seasonal fluctuations, changes in costs, or changes in accounting practices (Kotler, 2006). Therefore, many researchers consider customer satisfaction to be the best indicator of a company's future profit. Many articles have discussed the antecedents and consequences of customer satisfaction (Kotler, 2006), but seldom has any paper integrated Kano's model and the customer satisfaction index model to create more meaningful value. The following sections review these two models; thus, the antecedents of these models can be replaced by different quality attributes, which may assist managers to acquire more appropriate information that in turn can improve their overall quality levels and customer satisfaction, which serve as the theoretical basis of this research paper.

Kano's model

The two-dimensional model (Figure 1) was initially used in the development of manufactured product quality in a survey conducted on TV with decorative clocks (Kano et al., 1984). The survey results showed that user conceptions of quality were not one-dimensional but two-dimensional; thus, one-dimensional quality cannot totally encompass users' conceptions of quality. The Kano's model divides quality features into five distinct categories: must-be attribute, one-dimensional attribute, attractive attribute, indifferent attribute and reverse attribute.

The model can illustrate the relationship between customer satisfaction and quality performance (customer perception); moreover, each category respectively affects customer satisfaction in a different way as the following

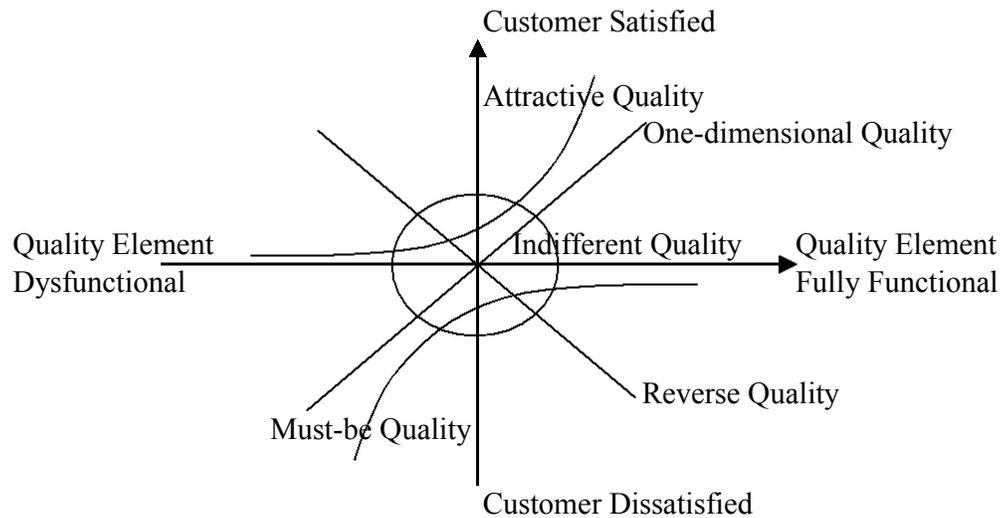


Figure 1. Kano's two-dimensional model.

shows (Kano et al., 1984):

1. One-dimensional quality attribute: Customers would be satisfied if this quality attribute is provided; if not, they would be dissatisfied.
2. Must-be quality attribute: Customers would be satisfied if this quality attribute was provided. However, customers would be dissatisfied if this quality attribute was not provided.
3. Attractive quality attribute: Customers would be satisfied if this quality attribute was provided; otherwise they would not be dissatisfied.
4. Indifferent quality attributes: Customers would be indifferent whether the quality attribute was present or not.
5. Reverse quality attributes: When this quality attribute present, customers would be dissatisfied.

Regarding the one-dimensional quality attributes, the must-be quality attributes and the attractive quality attributes, customers are satisfied when these quality attributes are provided; otherwise they are dissatisfied. Regarding the indifferent quality attributes, customers are indifferent as to whether they are present or not. Finally, regarding the reverse quality attributes, customers are dissatisfied when these quality attributes are present. Kano's model has been widely implemented in many studies (Richins, 1983; Matzler and Hinterhuber, 1998; Anderson and Mittal, 2000; Fuchs, 2002; Johnson et al., 2001; Zhang and Von Dran; 2002; Matzler et al., 2004; Kuo, 2004) and has proven to be a useful tool for analyzing the characteristics of customer satisfaction. In this present study, the following hypotheses regarding customer satisfaction were proposed:

H₁: The one-dimensional attribute will be positively associated with overall customer satisfaction.

H₂: The must-be attribute will be positively associated with overall customer satisfaction.

H₃: The attractive attribute will be positively associated with overall customer satisfaction.

Customer satisfaction index model

Prior to Szymanski and Henard (2001), few studies had investigated the outcomes of customer satisfaction. Understanding the outcomes of customer satisfaction, including customer loyalty (Bei and Chiao, 2001) and the intention to continue to do business with a particular provider remain relatively unexplored even though they are of central importance to marketers (Burnham et al., 2003). The Swedish Customer Satisfaction Barometer (SCSB) model established in 1989 was the first National Customer Satisfaction Index Model pertaining to purchased and consumed products and services (Fornell, 1992). The concept behind the National Customer Satisfaction Index Model requires a methodology with two properties (Fornell, 1992; Fornell and Wernerfelt, 1998; Fornell et al., 1996). First, the methodology must recognize that the Customer Satisfaction Index and the other constructs in the model represent different types of evaluations that cannot be measured directly. To this end, these constructs should be seen as latent variables and their scores or indexes should be general enough to be comparable across firms, industries, sectors, and nations. Second, the Customer Satisfaction Index must be measured in a way that not only accounts for consumption experience, but also is forward-looking. Accordingly, the

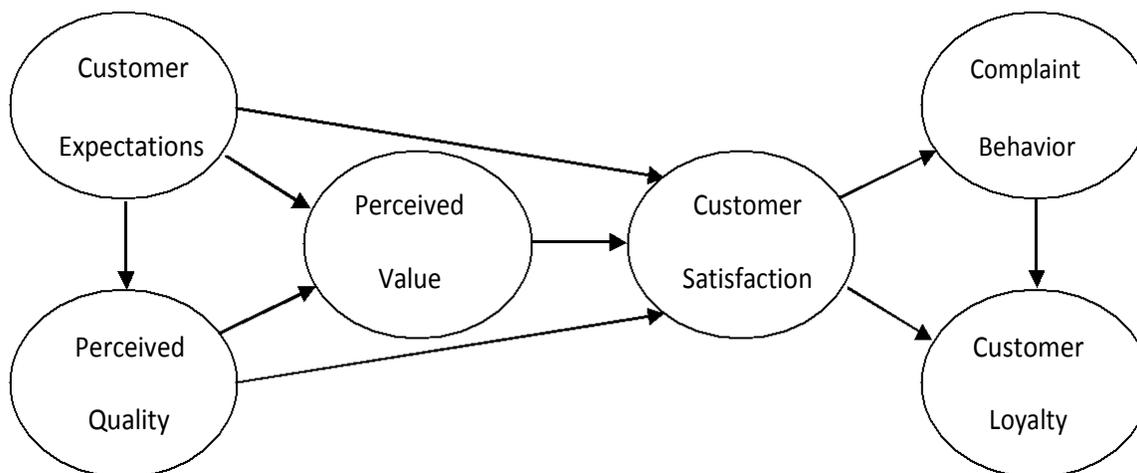


Figure 2. Basic American Customer Satisfaction Index model.

the Customer Satisfaction Index is embedded in a system of cause and effect relationships.

Due to the success of the SCSB, more and more nations and areas have modified this model to construct different types of National Customer Satisfaction Index Models, such as the American Customer Satisfaction Index model, the Swiss Customer Satisfaction Index model, and the European Customer Satisfaction Index model, among others (Fornell, 1992; Fornell et al., 1996; Gronholdt et al., 2000). Of the three models, the ACSI model, as illustrated in Figure 2, has proven to be the most popular, and has been implemented in many areas outside America, such as Europe and Asia. ACSI Institute would regularly use the American Customer Satisfaction Index (ACSI) to evaluate patient satisfaction with hospitals in the United States (American Customer Satisfaction Index, 2010). A major difference between the National Customer Satisfaction Index Model and other similar models is that the National Customer Satisfaction Index Model is measured in the context of other inter-related variables. In terms of the typical measurements used by most companies today, customer satisfaction is evaluated in isolation from other variables included in the model, followed by an estimation of the relationship between the variables. Following this methodology leads to estimations that are likely to have low reliability and be strongly biased, making it more difficult for researchers to find strong relationships between customer satisfaction and economic performance. The National Customer Satisfaction Index Model is specified as a composite latent variable in a system represented by multiple equations where measurement errors are accounted for, leading not only to better reliability and validity, but also to improved ways to translate customer satisfaction changes into improved repurchase behavior (Fornell, 1992).

Most National Customer Satisfaction Index Models,

such as the SCSB and ACSI models, follow Hirschman's exit-voice theory, which showed that increasing customer satisfaction both increased customer loyalty as well as decreased customer complaints (Fornell and Wernerfelt, 1998; Hirschman, 1970). When dissatisfied, customers have the option of exiting (e.g. going to a competitor) or voicing a complaint. Further, an increase in the number of complaints decreases customer loyalty. Therefore, the following hypotheses were proposed:

H₄: Overall customer satisfaction will be negatively associated with customer complaints.

H₅: Overall customer satisfaction will be positively associated with customer loyalty.

H₆: Customer complaints will be negatively associated with customer loyalty.

METHODS

Research model

Figure 3 is a conceptual model that depicts three of the antecedents derived from Kano's model, including the must-be attributes, the one-dimensional attributes, and the attractive attributes with respect to medical service. The indifferent attributes and reverse attributes were ignored because they seldom exist in the competitive medical service market. Three consequences derived from National Customer Satisfaction Index Model were also included: customer satisfaction, customer complaints, and customer loyalty. Customer loyalty was the ultimate dependent variable in the model because of its value as a proxy for profitable latent variables that could not be measured directly (Reichheld and Sasser, 1990).

Measures

Sample description Customer satisfaction was made up of three

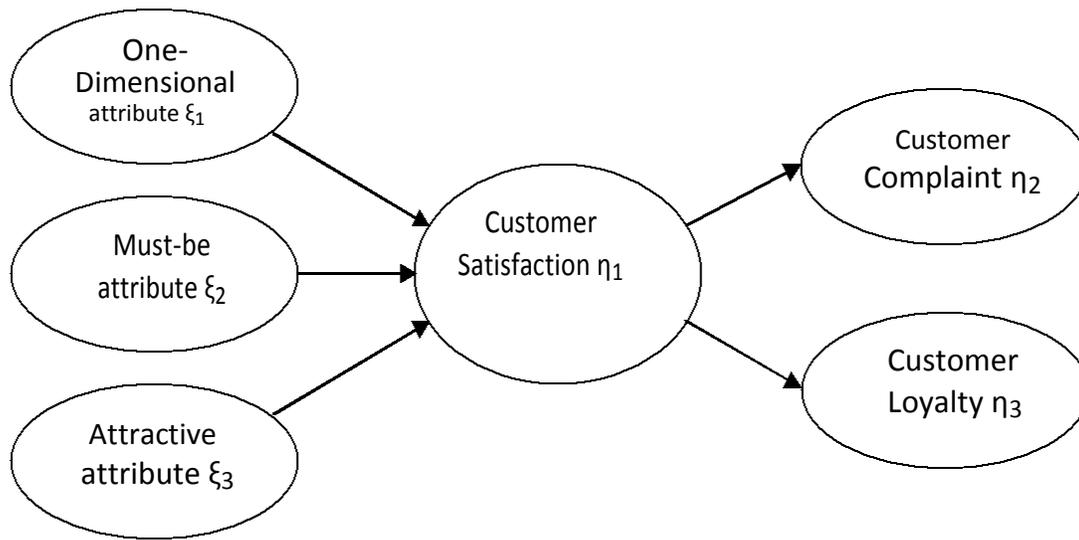


Figure 3. Conceptual framework.

antecedents of satisfaction derived from Kano's model: one-dimensional attributes, must-be attributes, and attractive attributes. The consequences of satisfaction in this model were derived from the National Customer Satisfaction Index Model, and pertained to customer complaint behaviors and customer loyalty. A questionnaire composed of three sections was designed to collect data from patients and their family members. The three sections included: the "Medical Service Quality Scale", the "Customer Satisfaction Scale", and "Personal Basic Information". The "Medical Service Quality Scale" referred to the 37 item scale proposed by Tang and Cheng after pre-testing and factor analysis (Tang and Cheng, 2001). The one-dimension attribute consisted of 26 items, the must-be attribute consisted of 8 items, and the attractive attribute consisted of 3 items. The "Customer Satisfaction Scale" of this study was equivalent to the ACSI model questionnaire composed of 8 items, three for customer satisfaction, two for customer complaints, and three for customer loyalty. With the exception of three questions, all the rated questions were measured on a ten-point scale as in the ACSI model. The weightings of the ten-point scale were standardized so that 1 represented very poor while 10 meant very good. In terms of the exceptions, one concerned a sub-question of the customer complaints category which asked for a "yes" or "no" answer. The other two questions were sub-questions of the customer loyalty category, and asked for responses in terms of percentages. As reflected in Table 1, the SEM (Structural Equation Modeling) with AMOS software was used in the analysis of the data.

Statistical analyses methods

The study first applied SPSS version 12.0 to process the descriptive statistic analysis, reliability analysis on the effective questionnaires, and understand the profile of the respondents and the internal consistency and relation between various variables. In addition, this study also tested and verified the relationship between three quality attributes (i.e. one-dimensional attributes, must-be attributes and attractive attributes), customer satisfaction, customer complaints, and customer loyalty through structural equation modeling (SEM), and applied AMOS software as the SEM analysis tool.

RESULTS

This study employed convenience sampling. The pretest consisted of a total of 232 questionnaires collected from Mioali hospital in Taiwan. After modifications, a total of 1,100 questionnaires were distributed to 15 hospitals in Taiwan for the main survey during June 1 to July 31, 2010. The sample included 401 patients and 609 family members, of which 497 were males and 513 females. After disregarding incomplete questionnaires, 923 were found to be usable, which represents a valid response rate of 83.9%.

Pre-analysis

Factor analysis and reliability analysis followed the standard procedure for the pretest questionnaires. In terms of reliability, we used Cronbach's α coefficient to test the unity of the subscales in the Medical Service Quality Scale. The Cronbach's α coefficient for the one-dimension attributes, the must-be attributes, and the attractive attributes was 0.974, 0.926, and 0.789, respectively. The Cronbach's α coefficient for the whole scale was 0.981, which suggests that the overall reliability was excellent. The Cronbach's α coefficient of the Customer Satisfaction Scale was 0.816, which also shows that the reliability was excellent (McDaniel, 1994).

Estimation of model

The final model results are given in Table 2. As this study

Table 1. Constructs and measurements in the questionnaire.

Latent constructs	Measurement indicators
One dimension (ξ_1)	Environment comfortable; Traffic convenience; Parking convenience; Capacity; Moving line; Employee's clothing; Correct materials; Modernization degree; Insurance service; Medical ethics; Reputation; Commitment; Medical prescription; Attendants; Waiting time; Follows patients regularly; Has patients' confidence; Security therapy; Accepts covert payments; Examining the purpose; States detailed degree of the prescription; Medical attitude; Listens to patients' demands; Care for patients; Patients' interest in the hospital; The improvement situation.
Must-be (ξ_2)	Explains how to take the way directions; Equipment of security; Subject labeling; Professional technology; The doctor is punctual; Quality of the drug; Secret degree of the patient; Expenses rationality.
Attractive (ξ_3)	Meals; Community relations; Contribution to the public activity.
Customer satisfaction (η_1)	Overall satisfaction from all experiences; Expectancy disconfirmation; Service compared to the ideal.
Customer complaint (η_2)	Has customer complained about the hospital? Would you recommend this hospital to your friends?
Customer loyalty (η_3)	In the future, would you choose this hospital again? Price increases, what percentage will be repurchased? Price decreases, what percentage will be repurchased?

had a skew problem, all of the one-dimensional attributes, must-be attributes, and attractive attributes, as well as customer satisfaction and customer complaints were negatively skewed. The attitudes resolution and the values of the coefficients were -1.135, -5.280, -5.584, -10.124, and -6.007 respectively. The customer loyalty was positively skewed with the resolution value leaning toward the attitude coefficient of 6.554. This study employed the ADF method to estimate the parameters, χ^2 (df= 6, N= 923) = 11.585, $p < 0.05$, CFI= 0.991, TLI= 0.979, and RMSEA= 0.03. This shows the overall goodness-of-fit of the model. First, from Table 2, the t-values of the covariance for each pair among the one-dimensional attributes, the must-be attributes, and the attractive attributes were 22.476, 21.023, and 20.449, respectively, while the corresponding correlation coefficients were 0.934, 0.872, and 0.847, respectively. This suggests that the medical service quality of the one-dimensional attributes, the must-be attributes, and the attractive attributes had a mutually positive correlation, and that Medical Service Quality Scale had good internal consistency and could represent the index of Medical Quality.

Secondly, based on the SEM analysis result, this study explored whether medical service quality could predict or measure Customer Satisfaction. If so, then medical service quality would be directly related to the results concerning Customer Satisfaction. According to Table 2,

for H_1 , the t-value of the relationship between the one-dimensional attribute and customer satisfaction was 2.957, which indicated that the relationship was significant ($p < 0.01$). Therefore, H_1 was supported; that is, the one-dimensional attribute positively influenced Customer Satisfaction. For H_2 , the t-value of the must-be attribute with respect to customer satisfaction was -1.057, which means that the relationship was non-significant ($p > 0.05$). Thus, H_2 was not supported. For H_3 , the t-value of the attractive attribute with respect to customer satisfaction was 2.712, which suggested a significant relationship ($p < 0.01$); thus, H_3 was supported: the attractive attribute positively influenced Customer Satisfaction. In Table 2, regarding H_4 , the t-value of Customer Satisfaction with respect to Customer Complaint was -8.838, which was significant ($p < 0.001$). Therefore, H_4 was supported in that overall Customer Satisfaction negatively influenced Customer Complaints. For H_5 , the t-value of overall Customer Satisfaction with respect to Customer Loyalty was -1.257, which was a non-significant relationship ($p > 0.05$). Therefore, H_5 , which stated that overall Customer Satisfaction could predict customer loyalty proved to be incorrect. For H_6 , the t-value for Customer Complaints compared to Customer Loyalty was 0.581, which was a non-significant relationship ($p > 0.05$). Therefore, H_6 was rejected. From this rejection it may deduced that overall Customer Complaints did not negatively influence Customer Loyalty.

Table 2. The estimation of the regression (path) coefficient and correlation coefficient.

Path	Estimates of Co-variances	Standard Error	t-value	Correlation Coefficient
One-dimensional ↔ Must-be	434.176	19.317	22.476***	0.934***
One-dimensional ↔ Attractive	183.250	8.717	21.023***	0.872***
Attractive ↔ Must-be	63.069	3.084	20.449***	0.847***
One-dimensional → Satisfaction	0.059	0.020	2.957**	0.282**
Must-be → Satisfaction	-0.053	0.050	-1.057	-0.090
Attractive → Satisfaction	0.225	0.083	2.712**	0.172**
Satisfaction → Complaint	-0.182	0.021	-8.838***	-0.255***
Satisfaction → Loyalty	-0.207	0.165	-1.257	-0.039
Complaint → Loyalty	0.140	0.241	0.581	0.019

Note: ** P-value < 0.01; *** P-value < 0.001.

DISCUSSION

Applying a survey approach based on the estimated results of the modified new model that integrated Kano's model and the Customer Satisfaction Index Model, the following conclusions with respect to the implications of medical service quality can be inferred. First, the attractive attribute and the one-dimensional attribute were both positively associated with overall customer satisfaction: as the attractive attribute and the one-dimensional attribute increased, the level of overall customer satisfaction also increased. Quality, deemed essential by customers, could be the key to customer satisfaction. Customers had different views on quality, and "no customer dissatisfaction" was not necessarily equal to "customer satisfaction" (Kondo, 2001). Secondly, the must-be attribute did not have a significant direct association with the overall level of customer satisfaction. According to the definition proposed in Kano's satisfaction increment, the must-be attributes were decreasing. When they were higher than customer expectations, the influence of the must-be quality attributes was less significant. Even with more effort, they were not associated with improved customer satisfaction. The integrated approach employed in this study enriched Kano's categorization information by allowing better targeting of resources with a better prioritization plan to improve the medical service quality attribute performance in regards to, first and foremost, the attractive attributes and the one-dimensional attributes. Future research may investigate which priority service attributes are worthy of additional study.

Thirdly, overall customer satisfaction had a significantly negative direct association with customer complaints. That is, as the customer satisfaction increased, customer complaint would decrease. Therefore, customer complaint would be seen as an immediate response of customer satisfaction, it is imbedded opportunities to

improve. Fourthly, customer complaints did not have a significant direct association with customer loyalty regarding medical services in Taiwan. This result mirrors Lexus' results regarding customer satisfaction in Taiwan (Yu et al., 2005). According to Johnson et al. (2001), when formal complaint management systems work well, customer complaints are not the only thing to consider in terms of customer loyalty. In this study, customer complaints were handled with tremendous skill and care at the various hospitals. The hospitals were therefore successful in eliminating one reason for customers to switch to another hospital.

Finally, customer satisfaction did not have a significant direct association with customer loyalty regarding medical services in Taiwan. Fornell (1992) stated that customer loyalty involves satisfaction, switching barriers, and having a voice. Loyal customers are not necessarily the satisfied customers, but satisfied customers tend to be loyal customers. Aside from satisfaction, there were other means of customer retention, such as customer switching barriers. A direct measure of switching barriers is very difficult to obtain. All costs, whether financial, psychological, learning and so forth, associated with deserting one supplier in favor of another constitute switching barriers. The nature of these barriers could be very different in different industries. Any attempt to measure all of them would be an overwhelming task.

As for the quality of medical care, since the implementation of the National Health Insurance (NHI) program in 1995, price has ceased to be an important factor for patients regarding switching from one hospital to another. However, it is still possible that a patient's case history does not become available to the new hospital following a transfer. Therefore, patients are generally loyal to their clinical doctor and the hospital said doctor practices at. If the doctor changes to another hospital or opens a new clinic, patients might choose to follow. However, for some patients switching barriers pertain to convenience,

especially in terms of location: often patients choose a hospital based on proximity to their residence or based on available parking, which is in short supply in Taiwan.

Conclusion

Today's attractive quality attributes can convert to must be quality attributes and eventually become one-dimensional quality attributes. As a consequence, the research model seems to be an interesting and necessary extension of the medical service quality literature. However, the one-dimensional quality elements are taken for granted. Patients are unlikely to be satisfied with the quality of the medical service they receive if general quality is lacking, and they are also unlikely to be satisfied with the quality of their medical service if it does not include some form of must-be quality, even if a form of general quality is present. A lack of some attractive qualities is not necessarily a big concern, but if some forms of attractive qualities are provided, it may possibly be a patient's favorite service. Therefore, medical service providers must focus on how to create attractive elements that increase customer satisfaction levels and gain customer loyalty.

Medical treatment and health care both concern human lives, so substituting elasticity of products is not an option. The unpredictable happens due to wounds and diseases, the cause for the need of medical service, time and space were indefinite. The medical activity was difficult because of standardization. Attitudes, service behavior, and the customer / patient's expectations are difficult to measure (Tang and Kuo, 2001). It is obvious that in today's competitive medical market, some patients might be influenced by or limit the variety of choices they consider when in need of medical service due to matters of convenience, identity, or seeking medical advice continuity. Still, hospitals must try to improve their service quality to increase customer satisfaction, or face the likelihood of a gradual loss of living space competitiveness.

This study combined the application of the Tang and Cheng concept based on Kano's model about medical service and the Customer Satisfaction Index Model. The integrated model was helpful in understanding customer needs and expectations, as well as the relationship between customer satisfaction, customer complaints, and customer loyalty. The findings suggest new insights for researchers who investigate the quality of medical service, and also for hospital managers who devote resources exclusively in an attempt to achieve the highest possible levels of patient satisfaction. These empirical study results suggest that the reason customer complaints did not negatively influence customer loyalty might have been caused by striking difference. Future studies may wish to further explore the affect factors. The

switching barriers phenomenon was evident, and further exploration of those barriers will lead to solutions that should increase customer loyalty. These issues are important for local Taiwanese hospitals as well as hospitals around the world. Finally, some limitations of the study should be noted. The 37 items used in our study could be seen as somewhat arbitrary and limited. The study was also limited to 15 local hospitals. Future research should investigate more hospitals to further ascertain whether these results are generalizable across Taiwan.

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